a clock for defining successive frames, each said frame comprising M time intervals, where M is an integer greater than 1;

a modulator for modulating each of said M carrier signals with a signal related to the value of one of said symbols thereby generating a modulated carrier signal corresponding to each of said carrier signals that is to be modulated and for generating a sum signal comprising a sum of said modulated carrier signals; and

an output circuit for transmitting said sum signal on said communications link, wherein said carrier signals comprise first and second carriers, said first carrier having a different bandwidth than said second carrier.

2.   (Amended). The communications system of claim 1 wherein said modulator comprises a tree-structured array of filter banks having nodes, including a root node and M leaf nodes, each of said values related to said symbols forming an input to a corresponding one of said leaf nodes, each of said [non-leaf] nodes, other than said leaf nodes, comprising one of said filter banks.

REMARKS

In response to the Office Action of 8/31/98, we have amended the claims to remove any indefiniteness. In particular, in claim 1, we have specified that the symbols have values representative of the signals; this recitation is supported at page 4, lines 29ff of the Specification. With respect to the Examiner's question of support for the term "said modulated carrier" in line 10 of claim 1, that support is provided at line 9 of the claim which specifies "generating a modulated carrier signal corresponding to each of said carrier signals that is to be modulated "
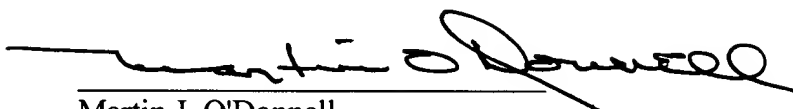
In claim 2, we have deleted the reference to non-leaf nodes but have otherwise preserved the recitation. The tree-structure of the filter banks, including the possession of root and leaf nodes, is discussed at page 6, lines 17ff of the Specification, including the description in U.S. Patent No. 5,408,580 which is expressly incorporated into the Specification by reference.

With respect to claim 3, the Examiner has questioned how M time-domain samples are produced in the transmitter. This is described at page 7, lines 20ff and in Fig. 3. With respect to the antecedent basis for the term "root node" in claim 3, this has now been supplied by amendment to claim 2 as noted above. Finally, regarding the term "common input" in claim 3, this is a characteristic of the filter described in U.S. Patent No. 5,408,580; see, for example, Fig. 6 of that patent showing a sub-band filter analysis bank with a common input.

Turning now to the rejection of the claims under 35 USC 103 in view of the Chow patent, U.S. Patent No. 5,479,447, Chow does not teach a communication system having carriers of different bandwidth as set forth in applicant's claims. "Discrete Multitone Modulation" means simply that there are multiple carriers used to transmit data over a link, not that the carriers are of different bandwidth. Chow does not teach to the contrary. Further, Chow does not teach the use of filter bank arrays in connection with transmission and reception, and is thus further distinguishable.

Please charge any additional fee occasioned by this paper to our Deposit Account

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Respectfully submitted,

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